Cit 4 1 3

P Pathology - Pole Blight

File: D-5231.A21 (4, B-1)

Intensification and Spread of Pole Blight in Western White Pine During 1950-52.

E. E. Hubert (12/5/52)

Two pole blight spread plots, one located on Charlie Creek, the other on Big Sand Creek, St. Joe National Forest, were recorded in 1952 and an analysis made of the data collected from each. These plots were selected as small isolated areas of pole blight timber surrounded by apparently healthy white pine. The Big Sand plot is an area near Disalto Creek and was the southernmost extent of pole blight in 1952. The trees on Plot No. 1, Charlie Cr., were laid out in 1950 along six radii stemming from a common center, which was selected as the center of the infection. The trees on Plot No. 2, Big Sand Cr., were laid out in 1950 along four radii in the same manner as for Plot No. 1.

Charlie Creek Spread Plot, Plot No. 1.

This plot with its six arms (Fig. 1) contains a total of 256 trees of which 190 are dominants and codominants. During the 1950-52 period a total of 8 new pole blight trees developed in the dominant and codominant group. Of these, 3 changed from healthy to the I stage in the first chain out from the center. One each changed from the 0 to the I and from the 0 to the II stage in the second and third chain, while one changed from the 0 to the I stage in the fourth chain (Table.1). No changes took place in the fifth chain from the center of the plot. These data give the impression that symptom intensification within the central area of the plot has occurred but give little positive evidence that a spread outward along the radii has taken place.

The tally of symptom classes (Table 2) shows the greatest concentration of trees of the I to X classes in the first chain, with a definite decrease in the second, third, fourth and fifth chains. This indicates that the center of the plot is accurately located as to pole blight infection. For 1952, the first chain contains 28% of the trees in the I stage and 13% dead. The second chain has 6% in the I stage, 2% in the II stage and 6% dead, while the third chain has 3% each in the I, II and X or dead stage. The fourth chain has only 3% in the I stage and the fifth chain shows no infection as reflected by symptoms.

In 1950 there were 3 dead pole blight trees on the plot with an increase to 8 in 1952. A total of 9 dead trees, with one of these a windfall, represented 5% of the dominants and codominants in the plot in 1952. The data show a steady increase, though small, in the mortality rate between 1950 and 1952. The dominant-codominant group shows 9 dead trees as compared to 2 for the intermediate-suppressed group.

Big Sand Creek Spread Plot, Plot No. 2.

This plot with a total of 138 trees, all dominants or codominants, showed an increase between 1950 and 1952 of 9 new pole blight trees. Most of these (6) changed from healthy to the I stage in the first four chains out from the center. One tree changed from healthy to the II stage in the second chain out, and one from healthy to the III stage in the third chain

out. For the most part no changes took place in the third and fourth chain areas. A tally of the symptom classification of the trees in each chain group indicates that the symptoms show the greatest intensification in the one-chain area with the smallest percentage of 0 trees and the greatest percentages of the I to X trees. As the distance from the plot center increases, there is a corresponding reduction in intensity and prevalence of symptom trees. Here also, the data indicate the plot in centered in the pole blight area. As in the Charlie Creek plot, intensification is shown but there is insufficient evidence to indicate a spread outward along the plot radii.

In 1950 there were 21 dead pole blight trees on the plot and this increased to 28 in 1952. Three trees developed positive blister rust symptoms during this period, and one tree died of unknown causes. The table shows 16 percent of the trees on the plot dead in 1950, 2 percent died in 1951 and 4 percent in 1952, indicating a slight increase in mortality rate between 1951 and 1952.

Pole Blight Survey Data

The survey of pole blight made by the Division of Forest Pathology and published in September, 1952 indicates that pole blight was not found any farther south in 1951 than in 1950. However, a number of new areas near the southern extremity were discovered in 1951. On the basis of the combined aerial and ground surveys made to date, the report states that pole blight appears to be intensifying and spreading, especially in the southern part of its range. The report also shows that the major increase in acreaage is in the Coeur d'Alene area, where an increase of 844 acres was recorded from 1951 to 1952. The least increase in acreage, or 318 acres, was noted in the Kaniksu area.

Summary

These data show progressive intensification of the symptoms of pole blight. They also record the appearance of first symptoms in 1952 on trees which were recorded as healthy in 1950 and 1951. More time is required before the plots can demonstrate any definite spread pattern along the outer arms of the radii. The present data are not conclusive, since we have no knowledge of the cause and therefore have no way to forecast the manner and extent of spread.

---

1. Wright, Ernest and D. P. Graham. 1952. Surveying for pole blight. Jour. For. 50:680-682.

Life Span of Pole Blight Trees

1949 - 1952

Plot Number	Changes in Symptom Class Number of Trees				Dead[1]		Changed to X		Changes in All Classes		Changes in All But X Classes		Dom. & Cod. Western White Pine
	0 - X	I - X	II - X	III - X	No.	%	No.	%	No.	%	No.	%	
Pole Blight Plots													
3 Hudlow		2	1	5	18	37	8	16	9	18	1	2	49
5 Nickelplate			1	2	7	26	3	11	7	26	2	7	27
6 Kerr Ranch		1	1	1	9	39	3	13	3	13	0	0	23
7 Lamb		1			12	50	1	4	5	21	4	17	24
12 4th July	4	5	4	1	39	39	14	14	17	17	3	3	100
13 Emerald	1	1	2		19	41	4	9	10	22	6	13	46
14 Davis	1	1		5	11	20	7	12	12	21	5	9	56
18 Ross		1	4	1	15	54	6	21	12	43	6	21	28
Totals	6	12	13	15	130	37	46	13	75	21	27	8	353
Control Plots													
1 John			1		10	26	0	0	2	5	1	3	39
4 Burnt Cabin					2	3	0	0	0	0	0	0	61
9 Bear Paw					0	0	0	0	5	19	5	19	26
10 Searchlight					0	0	0	0	0	0	0	0	17
19 Binarch					1	4	0	0	4	18	4	18	22
20 Pierce			1		7	18	1	3	1	3	0	0	38
21 Dudley					0	0	0	0	1	11	1	11	9
Totals	0	0	2	0	20	10	1	1	13	7	11	5	203

[1] Dead from all causes.